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| 09/835,937                                                               | 04/16/2001      | Jan S. Iwanezyk      | 41876/JEJ/P590          | 5612                    |  |
| 23363                                                                    | 7590 12 18 200. | 2                    |                         |                         |  |
| CHRISTIE. PARKER & HALE. LLP<br>350 WEST COLORADO BOULEVARD<br>SUITE 500 |                 |                      | EXAMINER                |                         |  |
|                                                                          |                 |                      | HANNAHER, CONSTANTINE   |                         |  |
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Please find below and/or attached an Office communication concerning this application or proceeding.

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Application No.                                                                                                                                                | Applicant(s)                                                                                                                                     |  |  |  |  |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 09/835,937                                                                                                                                                     | IWANCZYK ET AL.                                                                                                                                  |  |  |  |  |  |
| Office Action Summary                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Examiner                                                                                                                                                       | Art Unit                                                                                                                                         |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Constantine Hannaher                                                                                                                                           | 2878                                                                                                                                             |  |  |  |  |  |
| The MAILING DATE of this communication appears on the cover sheet with the correspondence address Period for Reply                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                |                                                                                                                                                  |  |  |  |  |  |
| A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                |                                                                                                                                                  |  |  |  |  |  |
| THE MAILING DATE OF THIS COMMUNICATION.  - Extensions of time may be available under the provisions of 37 CFR 1.13 after SIX (6) MONTHS from the mailing date of this communication.  - If the period for reply specified above is less than thirty (30) days, a reply - If NO period for reply is specified above, the maximum statutory period vortice is a failure to reply within the set or extended period for reply will, by statute.  - Any reply received by the Office later than three months after the mailing earned patent term adjustment. See 37 CFR 1.704(b).  Status | 36(a). In no event, however, may a re<br>within the statutory minimum of thirt<br>will apply and will expire SIX (6) MON<br>cause the application to become AB | eply be timely filed<br>y (30) days will be considered timely.<br>THS from the mailing date of this communication.<br>ANDONED (35 U.S.C. § 133). |  |  |  |  |  |
| 1) Responsive to communication(s) filed on                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | ·                                                                                                                                                              |                                                                                                                                                  |  |  |  |  |  |
| 2a) This action is <b>FINAL</b> . 2b) ⊠ Th                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | is action is non-final.                                                                                                                                        |                                                                                                                                                  |  |  |  |  |  |
| 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under <i>Ex parte Quayle</i> , 1935 C.D. 11, 453 O.G. 213.                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                |                                                                                                                                                  |  |  |  |  |  |
| Disposition of Claims                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | and quajio, roce on                                                                                                                                            |                                                                                                                                                  |  |  |  |  |  |
| 4) Claim(s) 1-33 is/are pending in the application                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | l.                                                                                                                                                             |                                                                                                                                                  |  |  |  |  |  |
| 4a) Of the above claim(s) is/are withdrawn from consideration.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                |                                                                                                                                                  |  |  |  |  |  |
| 5) Claim(s) is/are allowed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                |                                                                                                                                                  |  |  |  |  |  |
| 6)⊡ Claim(s) <u>1-33</u> is/are rejected.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                |                                                                                                                                                  |  |  |  |  |  |
| 7) Claim(s) is/are objected to.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 7) Claim(s) is/are objected to.                                                                                                                                |                                                                                                                                                  |  |  |  |  |  |
| 8) Claim(s) are subject to restriction and/o                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | r election requirement.                                                                                                                                        |                                                                                                                                                  |  |  |  |  |  |
| Application Papers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                |                                                                                                                                                  |  |  |  |  |  |
| 9) The specification is objected to by the Examiner.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                |                                                                                                                                                  |  |  |  |  |  |
| 10) ☐ The drawing(s) filed on 16 April 2001 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                |                                                                                                                                                  |  |  |  |  |  |
| Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  11) The proposed drawing correction filed on is: a) approved b) disapproved by the Examiner.                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                |                                                                                                                                                  |  |  |  |  |  |
| If approved, corrected drawings are required in reply to this Office action.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                |                                                                                                                                                  |  |  |  |  |  |
| 12) The oath or declaration is objected to by the Examiner.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                |                                                                                                                                                  |  |  |  |  |  |
| Priority under 35 U.S.C. §§ 119 and 120                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                |                                                                                                                                                  |  |  |  |  |  |
| 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                |                                                                                                                                                  |  |  |  |  |  |
| a) ☐ All b) ☐ Some * c) ☐ None of:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                |                                                                                                                                                  |  |  |  |  |  |
| 1. Certified copies of the priority documents have been received.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                |                                                                                                                                                  |  |  |  |  |  |
| 2. Certified copies of the priority documents have been received in Application No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                |                                                                                                                                                  |  |  |  |  |  |
| 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)). * See the attached detailed Office action for a list of the certified copies not received.                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                |                                                                                                                                                  |  |  |  |  |  |
| 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                |                                                                                                                                                  |  |  |  |  |  |
| a) The translation of the foreign language pro                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | visional application has be                                                                                                                                    | een received.                                                                                                                                    |  |  |  |  |  |
| Attachment(s)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | · -                                                                                                                                                            |                                                                                                                                                  |  |  |  |  |  |
| 1) Notice of References Cited (PTO-892) 2) Notice of Draftsperson's Patent Drawing Review (PTO-948) 3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4                                                                                                                                                                                                                                                                                                                                                                                                                    | 5) Notice of I                                                                                                                                                 | Summary (PTO-413) Paper No(s)<br>nformal Patent Application (PTO-152)                                                                            |  |  |  |  |  |

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#### **DETAILED ACTION**

### **Drawings**

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the readout electronics of claims 4 and 25 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

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A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the guard rings and field plates of claims 12 and 30 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the light guides and scintillators of claims 14 through 19 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

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### **Specification**

4. The disclosure is objected to because of the following informalities: page 2, line 15, the combination of prefix symbol, unit name, and unit symbol of length expressed as a submultiple is improper, this unit should appear as kiloohm-meter or  $k\Omega$ -m (with appropriate adjustment of the associated value).

Appropriate correction is required.

5. Section 608.01 of the MPEP states in part:

In order to minimize the necessity in the future for converting dimensions... to the metric system of measurements when using printed patents... all patent applicants should use the metric (S.I.) units followed by the equivalent English units when describing their inventions....

The Assistant Secretary and Commissioner of Patents and Trademark strongly reiterated and emphasized strong encouragement for patent applicants to use the metric system in patent applications in a message appearing at 1135 O.G. 55 dated February 18, 1992. At some future time, the USPTO will consider making it a requirement.

Note the use of the inch. The Examiner is unable to require the use of SI units.

6. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: the other scintillators recited in claims 17-19 and 21 are not found in the specification.

# Claim Rejections - 35 USC § 112

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claims 20 and 21 rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

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The specification does not describe what it might mean for the entrance window to be "optimized" for receiving light from a scintillator. In view of the plurality of characteristics that the entrance window and any particular scintillator material might have, one skilled in the art does not have the necessary guidance as to how to make and/or use the invention.

- The following is a quotation of the second paragraph of 35 U.S.C. 112:
   The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
- 10. Claims 13, 20, 21, 31, and 33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 13 recites the limitation "the grid" in line 1 (actual count). There is insufficient antecedent basis for this limitation in the claim.

Claims 20 and 21 recite that the entrance window is "optimized" for receiving light from a scintillator. One skilled in the art would be unable to decide whether a specific entrance window is "optimized" or not, especially as any particular scintillator is not a part of the scope of the claim.

Claim 31 recites the limitation "the grid" in line 2 (actual count). There is insufficient antecedent basis for this limitation in the claim.

Claim 33 differs from claim 1 only in reciting that the entrance window and the detectors are "means" with the same function as that of the previous claim. However, the specification does not associate any corresponding structure, material, or act with these elements in the combination which would make the scope of equivalents for the elements written in the form identified in 35 U.S.C. 112, sixth paragraph differ from the scope of the elements in claim 1. By presenting a claim which does not differ from the scope of claim 1, the scope of claim 33 is indefinite.

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### Claim Rejections - 35 USC § 102

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

- (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
- 12. Claims 1, 2, 5, 4, 8-12, 22, 23, 25, 28-30, 26, 27, and 33 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Dabrowski (US005757057A).

With respect to independent claim 1, Dabrowski discloses a detector array 100 (Fig. 1A) formed on a semiconductor material 104 having a first side and a second side comprising an entrance window 102 formed on the first side and being used to receive radiation (through surface 106) and an array of detectors 112 formed on the second side and being used for detecting the radiation received via the entrance window 102. The entrance window 102 in the detector array of Dabrowski forms a junction 105 with the semiconductor material 104, and the detectors 112 comprise pixilated (e.g., Fig. 1B) ohmic (non-injecting, column 6, line 46) contacts.

With respect to dependent claim 2, one or more of the detectors in the detector array of Dabrowski are surrounded by one or more junction separation implants surrounding the detectors in the form of a grid 240 (Fig. 2B) or rings 340 (Fig. 3B).

With respect to dependent claim 5, the semiconductor material in the detector array of Dabrowski is high resistivity (column 7, lines 12-13) n-type silicon (column 5, line 53), the entrance window is p+ type (Fig. 4 and column 5, lines 60-62), the array of detectors are n+ type (column 6, lines 46-50), and the junction separation implants are p+ type (column 8, line 28 and Fig. 4).

With respect to dependent claim 4, one or more of the detectors 112 in the detector array of Dabrowski are coupled to readout electronics (column 6, line 51).

With respect to dependent claim 8, the entrance window 302 in the detector array 300 of Dabrowski (Fig. 3A) is reverse biased (column 6, line 36) and the junction separation implants 340 are reverse biased (column 9, line 4). This generates a first depletion region 324 and a plurality of second depletion regions 342 with a pinch off region between them (Fig. 4).

With respect to dependent claim 9, the entrance window 102 in the detector array 100 of Dabrowski is reverse biased with sufficiently high voltage so as to achieve a controlled avalanche effect (column 6, lines 35-37).

With respect to dependent claims 10 and 11, the electric field at a periphery of the junction 105 between the entrance window 102 and the semiconductor material 104 in the detector array 100 of Dabrowski is shaped for preventing premature surface breakdown as is inherent in the presence of beveled edge structure 120. Process limitations cannot serve to impart patentability to structures. *In re Dike*, 157 USPQ 581, 585 (CCPA 1968). Methods of making a claimed product are immaterial in a product claim in view of *In re Thorpe*, 777 F.2d 695, 227 USPQ 964 (Fed. Cir. 1985) and *In re Brown*, 459 F.2d 531, 173 USPQ 685 (CCPA 1972). It is axiomatic that the additional presence of process limitations, no matter how detailed, cannot impart patentability to a product. *In re Pilkington*, 411 F.2d 1345, 162 USPQ 145 (CCPA 1969); *In re Johnson*, 394 F.2d 591, 157 USPQ 620 (CCPA 1968); and *In re Stephen*, 345 F.2d 1020, 145 USPQ 656 (CCPA 1965).

With respect to dependent claims 10 and 12, the electric field at a periphery of the junction 105 between the entrance window 102 and the semiconductor material 104 in the detector array 100 of Dabrowski is shaped for preventing premature surface breakdown as is inherent in the presence of guard rings 132.

With respect to independent claim 22, Dabrowski discloses a method corresponding to the illustrated detector array 100 (Fig. 1A) of forming the detector array on a semiconductor material 104

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having a first side and a second side which would comprise the steps of forming an entrance window 102 on the first side for receiving radiation (through surface 106) and forming an array of detectors 112 on the second side for detecting the radiation received via the entrance window 102. The entrance window 102 in the detector array of Dabrowski forms a junction 105 with the semiconductor material 104, and the detectors 112 comprise pixilated (e.g., Fig. 1B) ohmic (non-injecting, column 6, line 46) contacts.

With respect to dependent claim 23, the method disclosed by Dabrowski would further comprise the step of forming one or more junction separation implants surrounding the detectors in the form of a grid 240 (Fig. 2B) or rings 340 (Fig. 3B).

With respect to dependent claim 25, the method disclosed by Dabrowski would further comprise the step of coupling one or more of the detectors 112 in the detector array of Dabrowski to readout electronics (column 6, line 51).

With respect to dependent claims 28 and 29, the method disclosed by Dabrowski would further comprise the step of shaping the electric field at a periphery of the junction 105 between the entrance window 102 and the semiconductor material 104 to prevent premature surface breakdown as is inherent in the presence of beveled edge structure 120. Simple cutting and lapping techniques constitute the surface contouring resulting in the beveled edge structure 120.

With respect to dependent claims 28 and 30, the method disclosed by Dabrowski would further comprise the step of shaping the electric field at a periphery of the junction 105 between the entrance window 102 and the semiconductor material 104 to prevent premature surface breakdown as is inherent in the presence of guard rings 132.

With respect to dependent claim 26, the method disclosed by Dabrowski would further comprise the steps of reverse biasing the entrance window 302 (column 6, line 36) and reverse

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biasing the junction separation implants **340** (column 9, line 4). This generates a first depletion region **324** and a plurality of second depletion regions **342** with a pinch off region between them (Fig. **4**) which is equivalent to the recitation.

With respect to dependent claim 27, the method disclosed by Dabrowski further comprises the step of reverse biasing the entrance window 102 with sufficiently high voltage so as to achieve a controlled avalanche effect (column 6, lines 35-37).

With respect to independent claim 33, this claim is rejected on the same basis as claim 1. The elements of Dabrowski anticipate the structures corresponding to the recited means.

### Claim Rejections - 35 USC § 103

- 13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:
  - (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.
- 14. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
- 15. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dabrowski (US005757057A).

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With respect to dependent claim 6, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the detector array **100** of Dabrowski and reverse all of the conductivity types as this is a typical modification for any semiconductor structure in view of the generally equivalent performance.

With respect to dependent claim 7, the detector array 100 of Dabrowski is used as an avalanche imaging array and is accordingly used to detect light. However, those of ordinary skill in the art would have recognized that the detector array 100 qualified as "radiation hardened" as it operates "substantially the same as… large area avalanche photodiode devices of the prior art" (column 6, lines 41-43) which were known to be used to detect particles, x-rays, and gamma-rays in addition to light.

16. Claims 3, 14-21, 24, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dabrowski (US005757057A) in view of Iwanczyk *et al.* (US005773829A).

With respect to dependent claim 3, the entrance window 102 in the detector array 100 of Dabrowski is not coupled to anything in receiving light. Iwanczyk et al. shows that it is typical to couple a detector array 24 to a member of the recited group (including scintillator 22, scintillator segments 36A in an array, and light guide 66) for providing radiation (light) to the detector array 24. In view of the effective performance of the detector array of Dabrowski in detecting light as provided by the elements of Iwanczyk et al., it would have been obvious tone of ordinary skill in the art at the time the invention was made to couple the entrance window 102 to a member of the recited group.

With respect to dependent claim 14, the entrance window 102 in the detector array 100 of Dabrowski is not coupled to anything in receiving light. Iwanczyk *et al.* shows that it is typical to couple a detector array 24 to a CsI(Tl) scintillator (column 8, lines 47-48). In view of the effective

performance of the detector array of Dabrowski in detecting light as provided by the CsI(II) scintillator of Iwanczyk et al., it would have been obvious tone of ordinary skill in the art at the time the invention was made to couple the entrance window 102 to a CsI(Tl) scintillator.

With respect to dependent claim 15, Iwanczyk et al. suggests direct coupling of the detector array with the CsI(Tl) scintillator (column 8, lines 64-65).

With respect to dependent claim 16, Iwanczyk et al. suggests coupling the detector array with the CsI(Tl) scintillator via an interface 66 "that functions as" a light guide (column 8, lines 60-63).

With respect to dependent claim 17, the entrance window 102 in the detector array 100 of Dabrowski is not coupled to anything in receiving light. Iwanczyk et al. shows that it is typical to couple a detector array 24 to a scintillator of one of the recited compositions (column 8, lines 51-52). In view of the effective performance of the detector array of Dabrowski in detecting light as provided by the scintillator of Iwanczyk et al., it would have been obvious tone of ordinary skill in the art at the time the invention was made to couple the entrance window 102 to a scintillator of one of the recited compositions.

With respect to dependent claim 18, the entrance window 102 in the detector array 100 of Dabrowski is not coupled to anything in receiving light. Iwanczyk et al. shows that it is typical to couple a detector array 24 to a scintillator of one of the recited compositions (column 8, lines 51-52). In view of the effective performance of the detector array of Dabrowski in detecting light as provided by the scintillator of Iwanczyk et al., it would have been obvious tone of ordinary skill in the art at the time the invention was made to couple the entrance window 102 to a scintillator of one of the recited compositions. Iwanczyk et al. suggests direct coupling of the detector array with the scintillator (column 8, lines 64-65).

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With respect to dependent claim 19, the entrance window 102 in the detector array 100 of Dabrowski is not coupled to anything in receiving light. Iwanczyk *et al.* shows that it is typical to couple a detector array 24 to a scintillator of one of the recited compositions (column 8, lines 51-52). In view of the effective performance of the detector array of Dabrowski in detecting light as provided by the scintillator of Iwanczyk *et al.*, it would have been obvious tone of ordinary skill in the art at the time the invention was made to couple the entrance window 102 to a scintillator of one of the recited compositions. Iwanczyk *et al.* suggests coupling the detector array with the scintillator via an interface 66 "that functions as" a light guide (column 8, lines 60-63).

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With respect to dependent claim 20, the entrance window 102 in the detector array 100 of Dabrowski is not coupled to anything in receiving light. Iwanczyk *et al.* shows that it is typical to couple a detector array 24 to a CsI(Tl) scintillator (column 8, lines 47-48). In view of the effective performance of the detector array of Dabrowski in detecting light as provided by the CsI(Tl) scintillator of Iwanczyk *et al.*, it would have been obvious tone of ordinary skill in the art at the time the invention was made to couple the entrance window 102 to a CsI(Tl) scintillator. In doing so, it would take less than ordinary skill in the art to cause poor reception of light from the CsI(Tl) scintillator, so it would have been obvious at the time the invention was made to "optimize" such reception.

With respect to dependent claim 21, the entrance window 102 in the detector array 100 of Dabrowski is not coupled to anything in receiving light. Iwanczyk *et al.* shows that it is typical to couple a detector array 24 to a scintillator of one of the recited compositions (column 8, lines 51-52). In view of the effective performance of the detector array of Dabrowski in detecting light as provided by the scintillator of Iwanczyk *et al.*, it would have been obvious tone of ordinary skill in the art at the time the invention was made to couple the entrance window 102 to a scintillator of one

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of the recited compositions. In doing so, it would take less than ordinary skill in the art to cause poor reception of light from the scintillator, so it would have been obvious at the time the invention was made to "optimize" such reception.

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With respect to dependent claim 24, the method disclosed by Dabrowski does not further comprise the step of coupling the entrance window 102 in the detector array 100 to anything in receiving light. Iwanczyk et al. shows that it is typical to couple a detector array 24 to a member of the recited group (including scintillator 22, scintillator segments 36A in an array, and light guide 66) for providing radiation (light) to the detector array 24. In view of the effective performance of the detector array of Dabrowski in detecting light as provided by the elements of Iwanczyk et al., it would have been obvious tone of ordinary skill in the art at the time the invention was made to modify the method to comprise the step of coupling the entrance window 102 to a member of the recited group.

With respect to independent claim 32, the detector array 100 of Dabrowski may be described as "large area" but it does not match, for example, the (14 x 17) inch [(0.36 x 0.43) m] size typical of medical imaging as represented by Iwanczyk *et al.* It would have been obvious to one of ordinary skill in the art at the time the invention was made to include at least one of the detector array 100 of Dabrowski in a composite detector array comprising a plurality of arrays in order to detect the light from a larger field of view without the necessity for mechanical or optical scanning.

## Response to Submission(s)

17. The papers filed on January 25, 2002 (certificate of mailing dated November 2, 2001) have not been made part of the permanent records of the United States Patent and Trademark Office (Office) for this application (37 CFR 1.52(a)) because of damage from the United States Postal Service irradiation process. The above-identified papers, however, were not so damaged as to preclude the USPTO from making a legible copy of such papers. Therefore, the Office has made a copy of these papers, substituted them for the originals in the file, and stamped that copy:

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If applicant wants to review the accuracy of the Office's copy of such papers, applicant may either inspect the application (37 CFR 1.14(d)) or may request a copy of the Office's records of such papers (i.e., a copy of the copy made by the Office) from the Office of Public Records for the fee specified in 37 CFR 1.19(b)(4). Please do **not** call the Technology Center's Customer Service Center to inquiry about the completeness or accuracy of Office's copy of the above-identified papers, as the Technology Center's Customer Service Center will **not** be able to provide this service.

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18. This application has been published as US2002/0148967A1 on October 17, 2002.

## Allowable Subject Matter

- 19. Claims 13 and 31 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.
- 20. The following is a statement of reasons for the indication of allowable subject matter: although the detector array 200 of Dabrowski comprises an inner grid 240 surrounding one or more detectors 212 and an outer grid 232 surrounding the inner grid, no suggestion is found for adjusting the pixel size on the basis of the application of bias to the grids exclusively (that is, only to one grid).

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### Conclusion

21. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Liao *et al.* (US006172370B1) and Huth (US005021854A) relate to detector arrays.

22. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Constantine Hannaher whose telephone number is (703) 308-4850. The examiner can normally be reached on Monday-Friday with flexible hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David P. Porta can be reached on (703) 308-4852. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

ch December 12, 2002 for Stature